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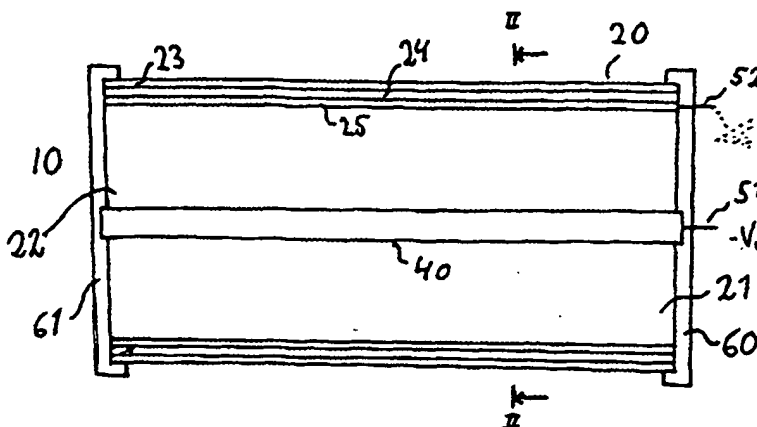
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(54) Title: A LIGHT SOURCE, AND A FIELD EMISSION CATHODE



(57) Abstract: The light source, comprises an evacuated container having walls, including an outer glass layer (23) which on at least part thereof is coated on the inside with a layer of phosphor (24) forming a luminescent layer and a conductive layer (25) forming an anode. The phosphor (24) is excited to luminescence by electron bombardment from a field emission cathode (40) located in the interior of the container. The field emission cathode (40) comprises a carrier having a diameter in the mm range. At least a portion of the surface of the carrier is provided with a conductive layer having surface irregularities in the form of tips, having a radial extension being less than about 10 μm . Due to the geometry and the tips, the electric field is concentrated and amplified at the field emission surface.

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By the features in claim 1, further, a light source without a starting up period is achieved, i.e. when the power is turned on, the light starts immediately, thanks to the use of a field emission cathode. A light source with no need for materials having negative environmental effects is also achieved.

By the features in claims 1 and 34, further, a light source having a field emitting cathode of simple and robust construction is obtained.

By the features in claim 5, further, a light source having a large active light emitting surface is achieved. This efficient use of the surface renders it possible to achieve a light source having a high light emission in relation to the heat produced.

By the features in claims 21 and 47, further, a field emitting cathode of simple and robust construction is obtained.

By the features in claims 21 through 33 and claims 47 through 54 a field emitting cathode is obtained which further provides for a high emission and uniform distribution of emitted electrons, in particular through a cylindrical surface region surrounding the cathode. A cathode with low interference between the field emitting surfaces is also achieved.

Further features and advantages will be apparent from the dependent claims and the detailed description below.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows schematically a longitudinal section of an embodiment of a light source according to the present invention,

Fig. 2 shows schematically a cross section taken at II-II in Fig. 1,

Fig. 3 shows schematically the cathode and the anode of Figure 2, and